

What is claimed:

1. Conductive polymer composite structures comprising conductive substrates and conductive polymers, wherein said conductive substrates have deformation property, and conductivity of said conductive substrates is not less than 1.0×10^3 S/cm.
2. Layered structures comprising conductive polymer-containing layers and solid electrolyte layers, wherein said conductive polymer-containing layers are provided with conductive polymer composite structures which include conductive substrates and conductive polymers, said conductive substrates have deformation property, and conductivity of said conductive substrates is not less than 1.0×10^3 S/cm.
3. Actuator elements which are driven for expansion and contraction or bending by electrochemomechanical deformation of conductive polymers, wherein an outer diameter or width of said actuator elements is less than 1 mm.
4. Bundles of conductive polymer composite structures provided with not less than two bundles of conductive polymer composite structures comprising conductive substrates and conductive polymers, wherein said conductive substrates have deformation property and conductivity of said conductive substrates is not less than 1.0×10^3 S/cm.
5. Bundles of conductive polymer composite structures as set forth in claim 4, wherein said conductive substrates are coiled spring members, said conductive polymer composite structures are cylindrical bodies, and said bundles are bundles of said cylindrical bodies.
6. A process for producing conductive polymers by electrochemical polymerization with conductive substrates as working electrodes, wherein said conductive substrates have deformation property and conductivity of said conductive substrates is not less than 1.0×10^3 S/cm.

7. Positioning devices, posture control devices, elevating devices, carrier devices, moving devices, regulating devices, adjusting devices, guiding devices, joint devices, changeover devices, reversing gears, winding devices, traction apparatuses, and swing devices using conductive polymer composite structures set forth in claim 1 for driving parts.

8. Pressing devices, pressurizing devices, gripping devices, push-out devices, bending devices, clamping devices, adhesion devices, and contact devices using conductive polymer composite structures set forth in claim 1 for pressing parts.

9. Positioning devices, posture control devices, elevating devices, carrier devices, moving devices, regulating devices, adjusting devices, guiding devices, joint devices, changeover devices, reversing gears, winding devices, traction apparatuses, and swing devices using layered structures set forth in claim 2 for driving parts.

10. Pressing devices, pressurizing devices, gripping devices, push-out devices, bending devices, clamping devices, adhesion devices, and contact devices using layered structures set forth in claim 2 for pressing parts.

11. Process for producing conductive polymer composite structures comprising conductive polymers and conductive substrates are complexed comprising the steps of immersing electrode holders in an electrolyte which can be immersed in an electrolyte bath, followed by electrochemical polymerization by turning on electricity interposing an electrolyte between counter electrodes and working electrodes, wherein said working electrode holders are provided with working electrode, working electrode terminal portions and electrode holder portions, said working electrodes are attached to said working electrode terminal portions, and said working electrodes include at least coiled conductive substrates.

12. A process for producing conductive polymer composite structures as set forth in claim 11, wherein plural of working electrodes are attached to terminal portions of said working electrodes.

13. A process for producing conductive polymer composite structures as set forth in claim 11, wherein holders of said working electrodes are further provided with counter electrodes.

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14. A process for producing conductive polymer composite structures as set forth in claim 13, wherein said counter electrodes are held with a space of 0.1 to 100 mm between said working electrodes and counter electrodes.

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15. A process for producing conductive polymer composite structures as set forth in claim 9, wherein said working electrodes comprise layered structures in which plural of coiled conductive substrates are bundled.

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